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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/632,997	08/01/2003	Peiyuan Wang	09797.0002-00	8974

22852 7590 01/15/2008

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EXAMINER	
HUYNH, CARLIC K	

ART UNIT	PAPER NUMBER
1612	

MAIL DATE	DELIVERY MODE
01/15/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/632,997	WANG ET AL.	
	Examiner	Art Unit	
	Carlic K. Huynh	1617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 October 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-37* is/are pending in the application.

4a) Of the above claim(s) *1-12* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *13-37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Receipt of applicants' amendments and remarks filed on October 12, 2007 is acknowledged.

Status of the Claims

1. Claims 1-37 are pending in the application, with claims 1-12 having been withdrawn from consideration, in response to the Non-Final Rejection submitted on April 12, 2007. New claims 25 to 37 have been added in an Amendment – After Non-Final Rejection filed on October 12, 2007. Accordingly, claims 13-37 are being examined on the merits herein.

Response to Arguments

2. Applicants' arguments, see "Amendment-After Non-Final Rejection" filed on October 12, 2007, with respect to "Oath/Declaration" have been fully considered and are persuasive. Applicants have argued that the MPEP § 605.01 states "[t]he statute (35 U.S.C. § 115) requires an applicant in a nonprovisional application, to state his or her citizenship" and that the Office's sample Declaration Form PTO/SB/01 does not call for the "country of citizenship" but simply citizenship. Accordingly, Applicants have complied with the citizenship disclosure of the Oath/Declaration. Thus, the Objections to the Oath/Declaration have been withdrawn in light of the arguments.

3. Applicants' amendments, see "Amendment-After Non-Final Rejection" filed on October 12, 2007, with respect to "Specification" have been fully considered and are persuasive. Applicants have amended the Specification to have quotation marks around "amino acid" in page

44, line 23. Applicants have amended the Specification to have quotation marks around "host" in page 45, line 10. Applicants have amended the Specification to change the phrase "pharmaceutically acceptable salt or prodrug" to "pharmaceutically acceptable salt" or "pharmaceutically acceptable prodrug" in page 45, line 21. Thus the Objections to the Specification have been withdrawn in light of the amendments.

4. Applicants' amendments, see "Amendment-After Non-Final Rejection" filed on October 12, 2007, with respect to "Rejections under 35 U.S.C. § 102(b)" to claims 13-14, 19, and 21 and to claim 18 have been fully considered and are persuasive.

Applicants have amended claim 13 to exclude compound 4 of Sasaki et al. (Journal of Organic Chemistry, 1976, vol. 41, no. 7, pp 1100-1104) by stating "when R^2 is CR'_2, W is O, $R^{4'}$ is hydroxyl, R^4 is hydrogen, $R^{5'}$ is hydroxyl, and R^5 is hydrogen, the bicyclic ring formed is not...an 8-azaxanthinyl ring wherein R^2 and R^3 form together the five-membered ring". Claim 14 depends on claim 13. Claim 19 is amended to narrow the definition of Z' to CH or CX. New claim 33 further encompasses compounds of the formula recited in claim 19 wherein Z' is CH, CX, or N and Z is CH or CX. Claim 21 is amended to delete the compound of formula 1 (K).

Compound 4 of Sasaki et al. is shown in the keto tautomer form, which may lie in equilibrium with the hydroxyl tautomer form. Accordingly, claim 18 is amended to exclude the hydroxyl tautomer form by stating "for compounds of formula 1 (B), when X is OH, Y is O, W is O, $R^{4'}$ is hydroxyl, R^4 is hydrogen, $R^{5'}$ is hydroxyl, R^5 is hydrogen, and Z is not N". New claim 27 has a similar definition for a compound of formula 1 (F). Claim 13 is also amended to exclude the hydroxyl tautomer.

Regarding the Rejections under 35 U.S.C. § 102(b) to claim 18, Applicants have argued that Compound 1, 5'-amino-2',5'-dideoxyguanosine, of Morin et al. (Chemical Research in Toxicology, 1995, vol. 8, pp 792-799) is not a cyclic nucleoside within the scope of any of the compounds of claim 18. Examiner argues that given the broadest interpretation of claim 18, the compound may be of formula 8 (A) is compound 1 of Morin et al. and as such, needs not be a cyclic nucleoside. Nonetheless, Applicants have amended claim 18 to exclude compounds of formula 8 (A) and new claim 26 provides for "compounds of formula 8 (A), when R^2 is NH, R^a is hydrogen, W is O, and R^4, R^5, and $R^{5'}$ are hydrogen, $R^{4'}$ is not hydroxyl".

Thus, the Rejections under 35 U.S.C. § 102(b) to claims 13-14, 19, and 21 and the Rejections under 35 U.S.C. § 102(b) to claim 18 have been withdrawn in light of the amendments.

5. Applicant's arguments, see "Amendment-After Non-Final Rejection" filed on October 12, 2007, with respect to "Rejections under 35 U.S.C. § 103" to claim 22 have been fully considered and are not persuasive. Applicants argue that Sasaki et al. (Journal of Organic Chemistry, 1976, vol. 41, no. 7, pp 1100-1104) disclose methanol, not ethanol, is a solvent used to make compound 4 and that methanol is not a pharmaceutically acceptable carrier. Examiner argues that Sasaki et al. teach compound 4 can be more conveniently prepared by heating compound 3a in 1 N hydrochloric acid (page 1103). Since hydrochloric acid is a commonly used pharmaceutically acceptable salt and pharmaceutically acceptable carrier, Sasaki et al. does indeed teach a pharmaceutically acceptable carrier. Thus, the Rejections under 35 U.S.C. § 103 to claim 22 have been maintained.

6. Applicant's arguments with respect to claims 13-14, 18-19, and 21-22 have been considered but are moot in view of the new ground(s) of rejection. The following new ground(s) of rejection to amended claims 13-37 are used herewith.

Claims 13-37 are directed to a compound and thus intended use is not given any patentable weight.

Specification

7. The use of the trademark ROFERON®, PEGASYS®, INTRON®, PEG-INTRON®, REBETOL®, and COPEGUS® has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 13-21 and 25-37 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 13-21 and 25-37 are directed to a compound. However, the claims recite a pharmaceutically acceptable carrier and thus would render the claims as pharmaceutical compositions. Claims 13-21 and 25-37 are rendered indefinite because compound claims do not contain a pharmaceutically acceptable carrier but rather the compounds themselves.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 13-14 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Ewing et al. (Carbohydrate Research, 1999, Vol. 321, pp. 190-196).

It is noted that compounds of formula (I) wherein R^2 is CR'_2, then R^1 and R^3 can come together with CR'_2 to form a substituted or unsubstituted bicyclic ring that can include one or more heteroatoms and when W is O, $R^{4'}$ is hydroxyl, and R^1, R^3, R^4, R^5, and $R^{5'}$ are hydrogen, R^2 is not NH and that when R^2 is CR'_2 W is O, $R^{4'}$ is hydroxyl, R^4 is hydrogen, $R^{5'}$ is hydroxyl, and R^5 is hydrogen, the bicyclic ring formed is not a xanthinyl ring wherein R^1 and R^2 form together the five-membered ring or an 8-azaxanthinyl ring wherein R^2 and R^3 form together the five-membered ring are free of the prior art. Thus the search has been broadened for compounds of formula (I).

Ewing et al. teach compound 10 (page 192, Scheme 2). Compound 10 anticipates compounds of formula (I) when CR'_2 come together with R^1 or R^3 to form a substituted 5-

membered ring, the other R^1 or R^3 that did not come together with CR'_2 to form a substituted 5-membered ring is H, R^4 and R^5 is H, and $R^{4'}$ and $R^{5'}$ is OH.

For these reasons the claimed subject matter is deemed to fail to patentably distinguish over the state of the art as represented by the cited reference. The claims are therefore properly rejected under 35 U.S.C. 102(b).

10. Claims 19 and 33 are rejected under 35 U.S.C. 102(b) as being anticipated by Yoneda (JP 5-140179 A as cited in the IDS).

It is noted that a machine translation of JP 5-140179 A is used for citation purposes. A full translation will be provided.

Yoneda teaches compounds of formula (I), where X, R^1, and R^2 are hydrogen (abstract). The compounds of Yoneda is the compound in instant claims 19 and 33 when R^4 and R^5 are H, $R^{4'}$ and $R^{5'}$ are OH, W is O, Z' is N, and Z is CX, where X is H.

For these reasons the claimed subject matter is deemed to fail to patentably distinguish over the state of the art as represented by the cited reference. The claims are therefore properly rejected under 35 U.S.C. 102(b).

11. Claims 26 and 29 are rejected under 35 U.S.C. 102(b) as being anticipated by Minakawa et al. (Heterocycles, 1996, vol. 42, no. 1, pp 149-154).

Minakawa et al. teach compound 19 (page 152, Figure 1). Compound 19 is the compound of formula 2(D) and the compound of formula 2(H), when Z is N, X is NH_2, Y is O, R^4 and R^5 are H, and $R^{4'}$ and $R^{5'}$ are OH.

For these reasons the claimed subject matter is deemed to fail to patentably distinguish over the state of the art as represented by the cited reference. The claims are therefore properly rejected under 35 U.S.C. 102(b).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. Claims 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al. (Journal of Organic Chemistry, 1976, vol. 41, no. 7, pp 1100-1104 as cited in the IDS).

Sasaki et al. teach a nucleoside analog, Compound 4, which is a homolog of the compound of the formula 1(V), i.e., they differ only by a CH_2 group (see abstract and page 1100). One having ordinary skill in the art would have been motivated to prepare the instantly claimed compound because such structurally homologous compounds are expected to possess similar properties. It has been held that compounds that are structurally homologous to prior art compounds are prima facie obvious, absent a showing of unexpected results. In re Hass, 60 USPQ 544 (CCPA 1944); In re Henze, 85 USPQ 261 (CCPA 1950).

Sasaki et al. teach a nucleoside analog, Compound 4, 9,5'-cyclo-3-β-D-ribofuranosyl-8-azaxanthine and that some of the 5-halopyrimidine nucleosides are known to be chemicals of biological interest (abstract and page 1100). Thus the prior art acknowledges that these 5-halopyrimidine nucleosides can be used in pharmaceutical compositions. It is noted that

Compound 4 is synthesized using methanol, not ethanol (page 1103). However, Sasaki et al. teach compound 4 can be more conveniently prepared by heating compound 3a in 1 N hydrochloric acid, which is a pharmaceutically acceptable carrier (page 1103, experimental section for the synthesis of Compound 4).

Given that Compound 4 has biological activity and that compounds with biological activity are routinely made into pharmaceutical compositions with pharmaceutically acceptable carriers, it would be obvious to make a pharmaceutical composition of Compound 4 in a pharmaceutically acceptable carrier.

13. Claims 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al. (Journal of Organic Chemistry, 1976, vol. 41, no. 7, pp 1100-1104 as cited in the IDS) as applied to claims 21-22 above, in view of Gilbert et al. (Antimicrobial Agents and Chemotherapy, 1986, Vol. 30, No. 2, pp. 201-205).

Sasaki et al. do not teach ribavirin.

Gilbert et al. teach nucleoside analogs are used as antiviral agents (page 201). Gilbert et al. further teach a specific nucleoside analog, ribavirin, has anti-viral activity and is used to treat a broad spectrum of DNA and RNA viruses (page 201). Gilbert et al. further disclose the clinical use of ribavirin in humans (page 202). Since ribavirin has been administered in human patients, it would be obvious that the ribavirin was in a pharmaceutical composition containing pharmaceutically acceptable carriers and excipients.

Accordingly, absence the showing of unexpected results, it would have been obvious to a person of skill in the art at the time of the invention to employ the compounds of Sasaki et al. to

contain ribavirin because the compounds of Gilbert et al. teach ribavirin and according to Gilbert et al., ribavirin is a nucleoside analog that can be used to treat a broad variety of viral diseases

The motivation to combine the compounds of Sasaki et al. to the compounds of Gilbert et al. is that compounds of Gilbert et al. are ribavirin that such compositions can be used to treat a broad variety of viral diseases.

It is noted that "It is obvious to combine individual compositions taught to have the same utility to form a new composition for the very same purpose" and "It is obvious to combine two compositions taught by the prior art to be useful for the same purpose to form a third composition that is to be used for the very same purpose". *In re Kerkhoven*, 626 F.2d 846, 205 U.S.P.Q. 1069 (C.C.P.A. 1980).

Conclusion

14. No claims are allowable.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carlic K. Huynh whose telephone number is 571-272-5574. The examiner can normally be reached on Monday to Friday, 8:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sreenivasan Padmanabhan can be reached on 571-272-0629. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ckh

SREENI PADMANABHAN
SUPERVISORY PATENT EXAMINER